FIG. 1

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FIG. 2

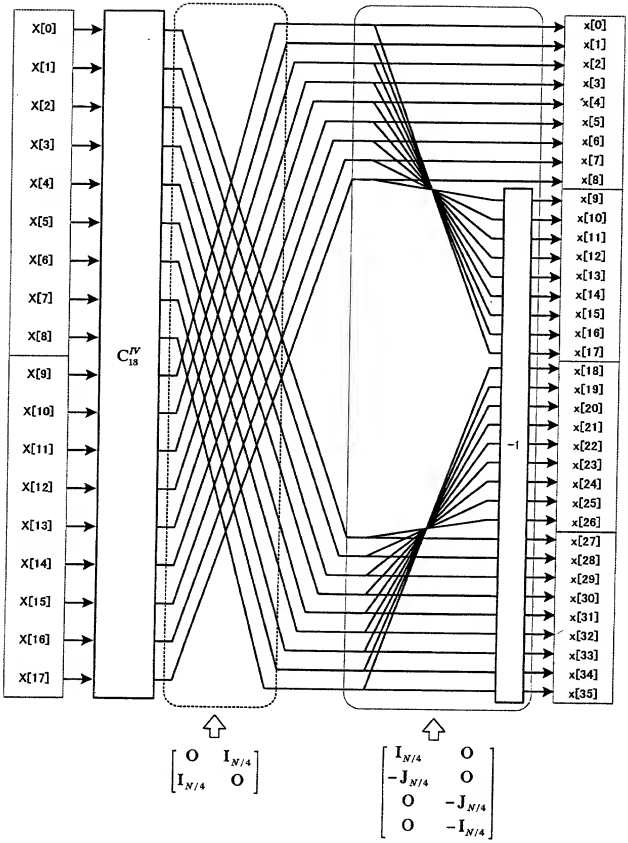
X[0]
X[1]
X[2]
X[3]
X[4]
X[5]
X[6]
X[7]
X[8]
X[9]
X[10]
X[11]
X[12]
X[13]
X[14]
X[15]
X[16]
X[17]
C_{18}^{IV}
-1
x[0]
x[1]
x[2]
x[3]
x[4]
x[5]
x[6]
x[7]
x[8]
x[9]
x[10]
x[11]
x[12]
x[13]
x[14]
x[15]
x[16]
x[17]
x[18]
x[19]
x[20]
x[21]
x[22]
x[23]
x[24]
x[25]
x[26]
x[27]
x[28]
x[29]
x[30]
x[31]
x[32]
x[33]
x[34]
x[35]
$\begin{bmatrix} O & I_{N/4} \\ I_{N/4} & O \end{bmatrix}$
$\begin{bmatrix} I_{N/4} & O \\ -J_{N/4} & O \\ O & -J_{N/4} \\ O & -I_{N/4} \end{bmatrix}$

FIG. 3

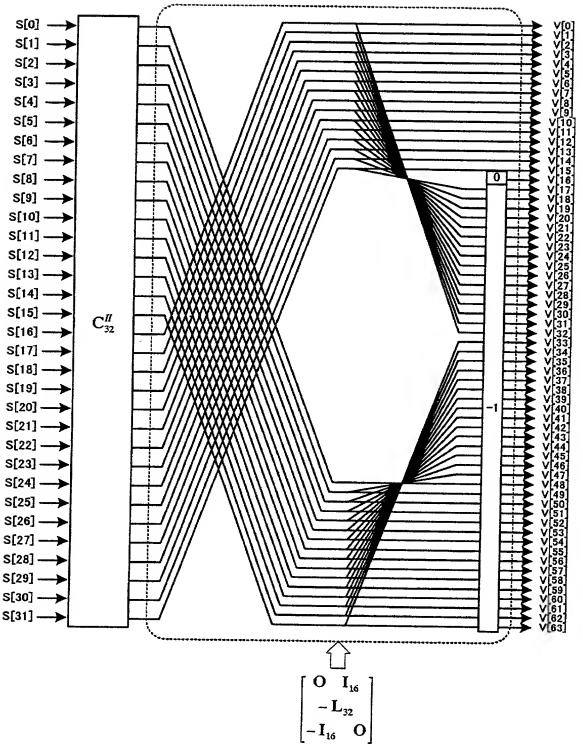
S[0]
S[1]
S[2]
S[3]
S[4]
S[5]
S[6]
S[7]
S[8]
S[9]
S[10]
S[11]
S[12]
S[13]
S[14]
S[15]
S[16]
S[17]
S[18]
S[19]
S[20]
S[21]
S[22]
S[23]
S[24]
S[25]
S[26]
S[27]
S[28]
S[29]
S[30]
S[31]
C_{32}^{II}
0
-1
V[0]
V[1]
V[2]
V[3]
V[4]
V[5]
V[6]
V[7]
V[8]
V[9]
V[10]
V[11]
V[12]
V[13]
V[14]
V[15]
V[16]
V[17]
V[18]
V[19]
V[20]
V[21]
V[22]
V[23]
V[24]
V[25]
V[26]
V[27]
V[28]
V[29]
V[30]
V[31]
V[32]
V[33]
V[34]
V[35]
V[36]
V[37]
V[38]
V[39]
V[40]
V[41]
V[42]
V[43]
V[44]
V[45]
V[46]
V[47]
V[48]
V[49]
V[50]
V[51]
V[52]
V[53]
V[54]
V[55]
V[56]
V[57]
V[58]
V[59]
V[60]
V[61]
V[62]
V[63]
$\begin{bmatrix} O & I_{16} \\ -L_{32} & \\ -I_{16} & O \end{bmatrix}$

FIG. 4

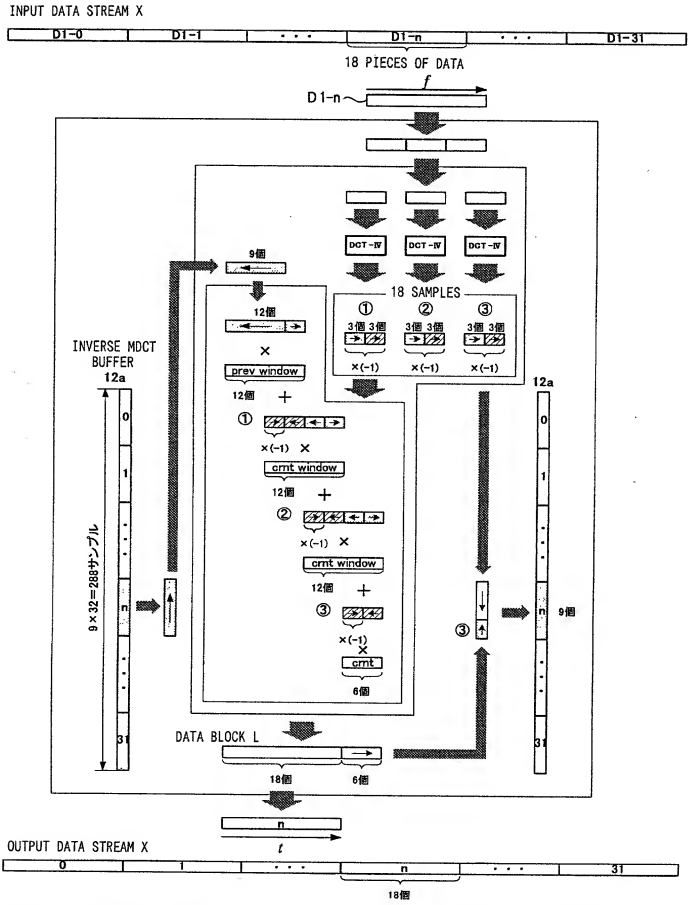
INPUT DATA STREAM X
D1-0
D1-1
D1-n
D1-31
18 PIECES OF DATA
f
D1-n
DCT-IV
DCT-IV
DCT-IV
9個
12個
18 SAMPLES
①
②
③
3個 3個
3個 3個
3個 3個
×(-1)
×(-1)
×(-1)
INVERSE MDCT BUFFER
12a
prev window
12個
×(-1)
cmt window
12個
×(-1)
cmt window
12個
×(-1)
cmt
6個
9×32=288サンプル
0
1
n
31
12a
0
1
n
31
9個
DATA BLOCK L
18個
6個
n
t
OUTPUT DATA STREAM X
0
1
n
31
18個

FIG. 5

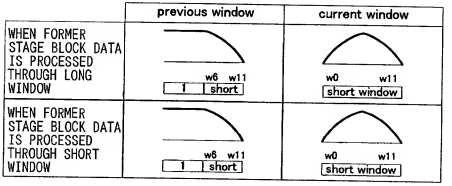
previous window
current window
WHEN FORMER STAGE BLOCK DATA IS PROCESSED THROUGH LONG WINDOW
w6 w11
1 short
w0 w11
short window
WHEN FORMER STAGE BLOCK DATA IS PROCESSED THROUGH SHORT WINDOW
w6 w11
1 short
w0 w11
short window

FIG. 6

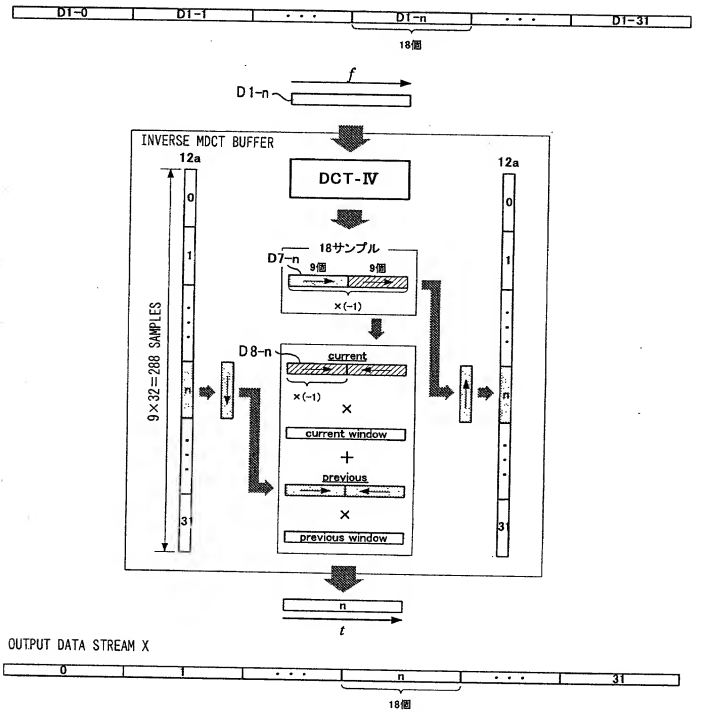
INPUT DATA STREAM X
D1-0
D1-1
D1-n
D1-31
18個
f
D1-n
INVERSE MDCT BUFFER
12a
DCT-IV
18サンプル
D7-n
9個
9個
×(-1)
D8-n
current
×(-1)
current window
previous
previous window
9×32=288 SAMPLES
0
1
n
31
n
t
OUTPUT DATA STREAM X
0
1
n
31
18個

FIG. 7

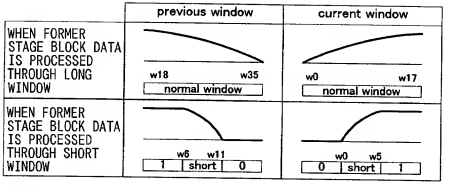
previous window
current window
WHEN FORMER STAGE BLOCK DATA IS PROCESSED THROUGH LONG WINDOW
w18
w35
normal window
w0
w17
normal window
WHEN FORMER STAGE BLOCK DATA IS PROCESSED THROUGH SHORT WINDOW
w6
w11
1
short
0
w0
w5
0
short
1

FIG. 8

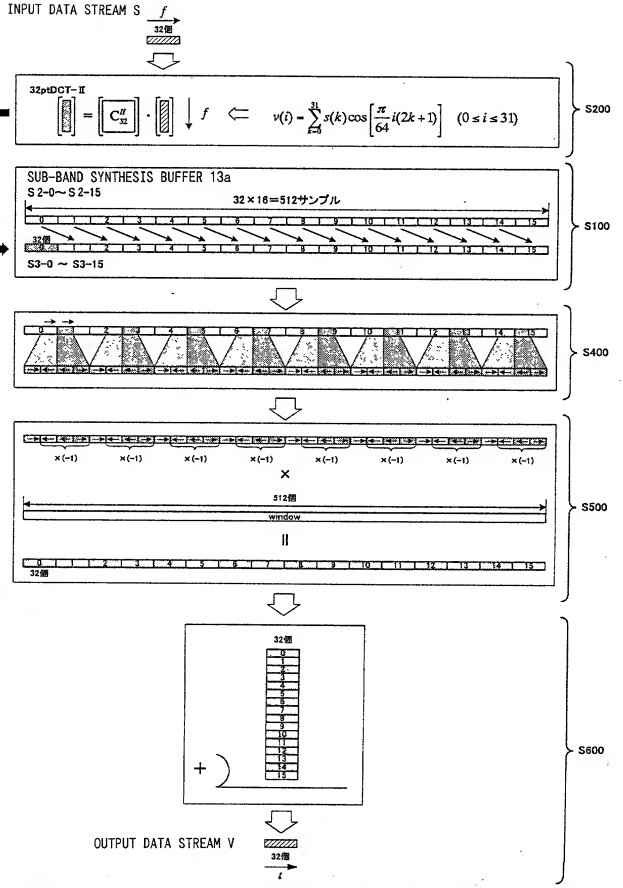
INPUT DATA STREAM S
f
32個
32ptDCT-II
$\left[\quad\right] = \left[C_{32}^{II}\right] \cdot \left[\quad\right]$
$v(i) = \sum_{k=0}^{31} s(k)\cos\left[\frac{\pi}{64} i(2k+1)\right] \quad (0 \le i \le 31)$
S200
S300
SUB-BAND SYNTHESIS BUFFER 13a
S2-0～S2-15
32×16=512サンプル
S100
S3-0 ～ S3-15
S400
×(−1)
S500
512個
window
32個
S600
OUTPUT DATA STREAM V
32個
i

FIG. 9

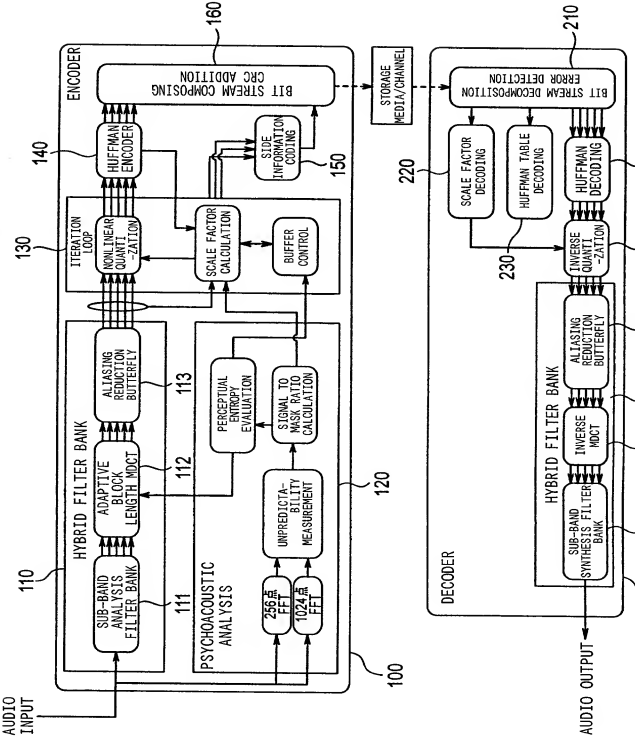
AUDIO INPUT
ENCODER
HYBRID FILTER BANK
SUB-BAND ANALYSIS FILTER BANK
ADAPTIVE BLOCK LENGTH MDCT
ALIASING REDUCTION BUTTERFLY
PSYCHOACOUSTIC ANALYSIS
256-P FFT
1024-P FFT
UNPREDICTA-BILITY MEASUREMENT
PERCEPTUAL ENTROPY EVALUATION
SIGNAL TO MASK RATIO CALCULATION
ITERATION LOOP
NONLINEAR QUANTI-ZATION
SCALE FACTOR CALCULATION
BUFFER CONTROL
HUFFMAN ENCODER
SIDE INFORMATION CODING
BIT STREAM COMPOSING CRC ADDITION
STORAGE MEDIA/CHANNEL
DECODER
BIT STREAM DECOMPOSITION ERROR DETECTION
SCALE FACTOR DECODING
HUFFMAN TABLE DECODING
HUFFMAN DECODING
INVERSE QUANTI-ZATION
HYBRID FILTER BANK
ALIASING REDUCTION BUTTERFLY
INVERSE MDCT
SUB-BAND SYNTHESIS FILTER BANK
AUDIO OUTPUT
100
110
111
112
113
120
130
140
150
160
200
210
220
230
240
250
260
261
262
263

FIG. 10

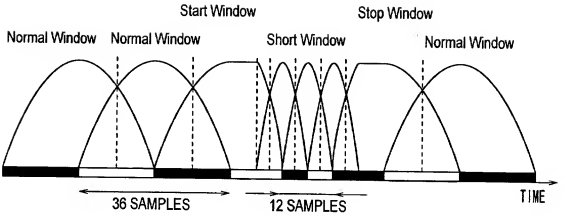
Start Window
Stop Window
Normal Window
Normal Window
Short Window
Normal Window
36 SAMPLES
12 SAMPLES
TIME

FIG. 11

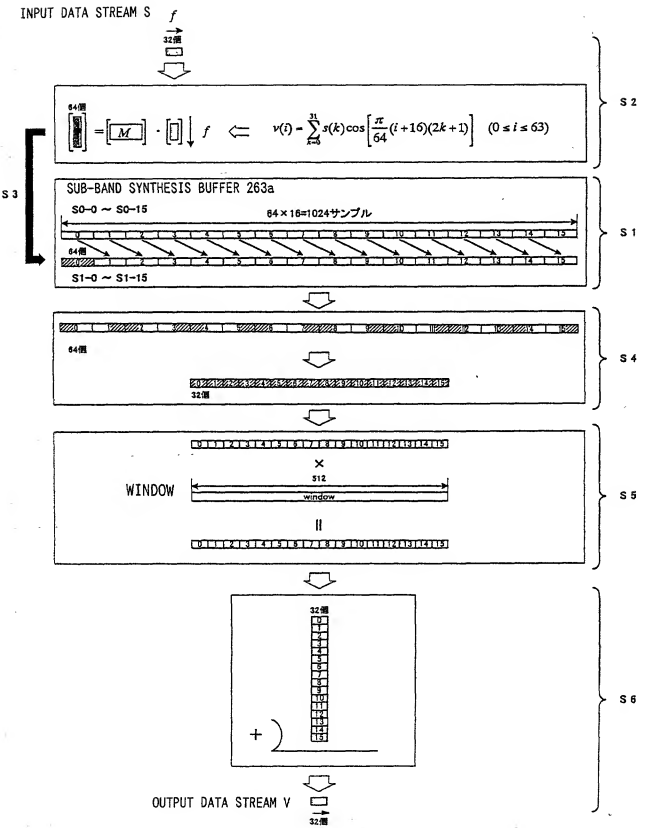
INPUT DATA STREAM S
f
32個
64個
S2
S3
SUB-BAND SYNTHESIS BUFFER 263a
S0-0 ～ S0-15
64×16=1024サンプル
S1
64個
S1-0 ～ S1-15
64個
S4
32個
WINDOW
512
window
S5
32個
S6
OUTPUT DATA STREAM V
32個
t

FIG. 12

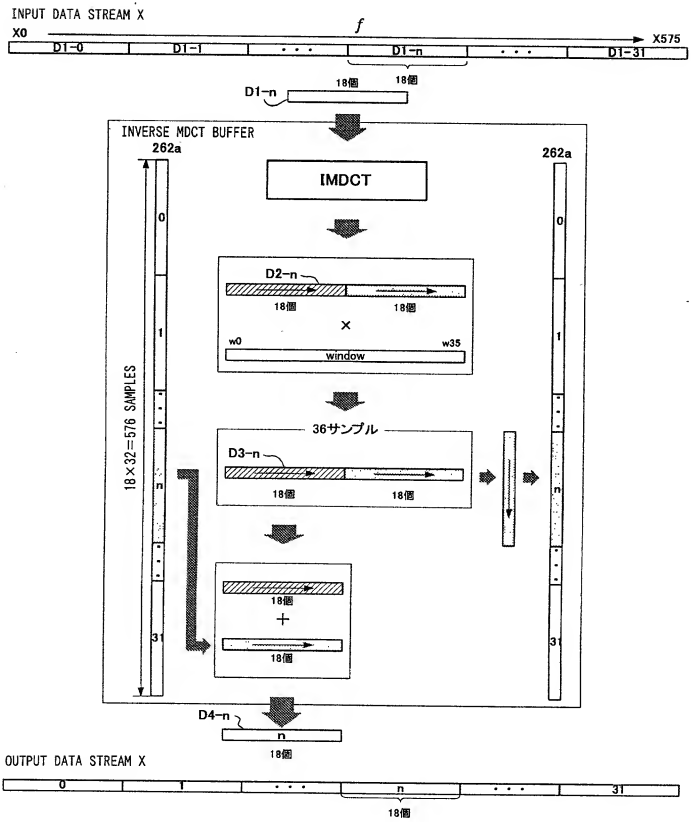
INPUT DATA STREAM X
X0
f
X575
D1-0
D1-1
D1-n
D1-31
18個
18個
D1-n
INVERSE MDCT BUFFER
262a
IMDCT
262a
0
1
n
31
18×32=576 SAMPLES
D2-n
18個
18個
×
w0
window
w35
36サンプル
D3-n
18個
18個
18個
+
18個
D4-n
n
18個
OUTPUT DATA STREAM X
0
1
n
31
18個

FIG. 13

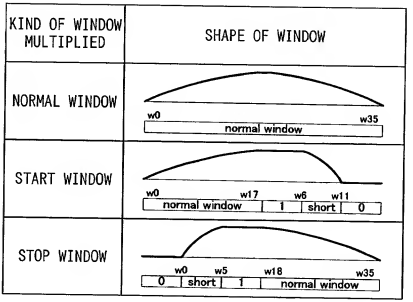
KIND OF WINDOW MULTIPLIED
SHAPE OF WINDOW
NORMAL WINDOW
w0
w35
normal window
START WINDOW
w0
w17
w6
w11
normal window
1
short
0
STOP WINDOW
w0
w5
w18
w35
0
short
1
normal window

FIG. 14

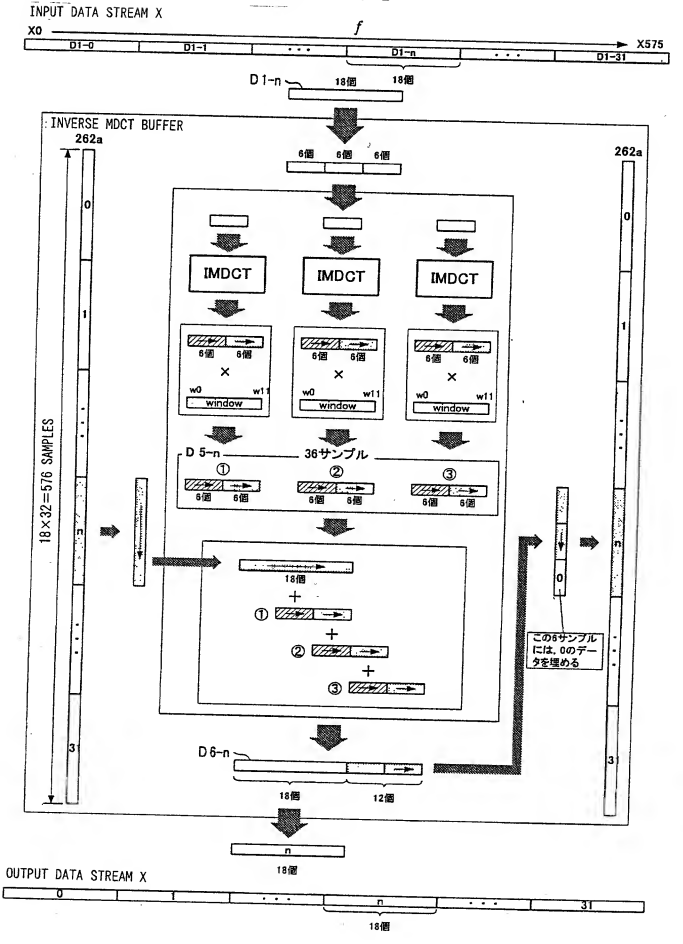
INPUT DATA STREAM X
X0
f
X575
D1-0
D1-1
D1-n
D1-31
D1-n
18個
18個
INVERSE MDCT BUFFER
262a
18×32=576 SAMPLES
6個 6個 6個
IMDCT
IMDCT
IMDCT
6個 6個
w0 w11
window
D 5-n
36サンプル
18個
12個
D6-n
n
18個
OUTPUT DATA STREAM X
0
1
n
31
18個
このnサンプルには、0のデータを埋める

FIG. 15

KIND OF WINDOW MULTIPLIED	SHAPE OF WINDOW
SHORT WINDOW	